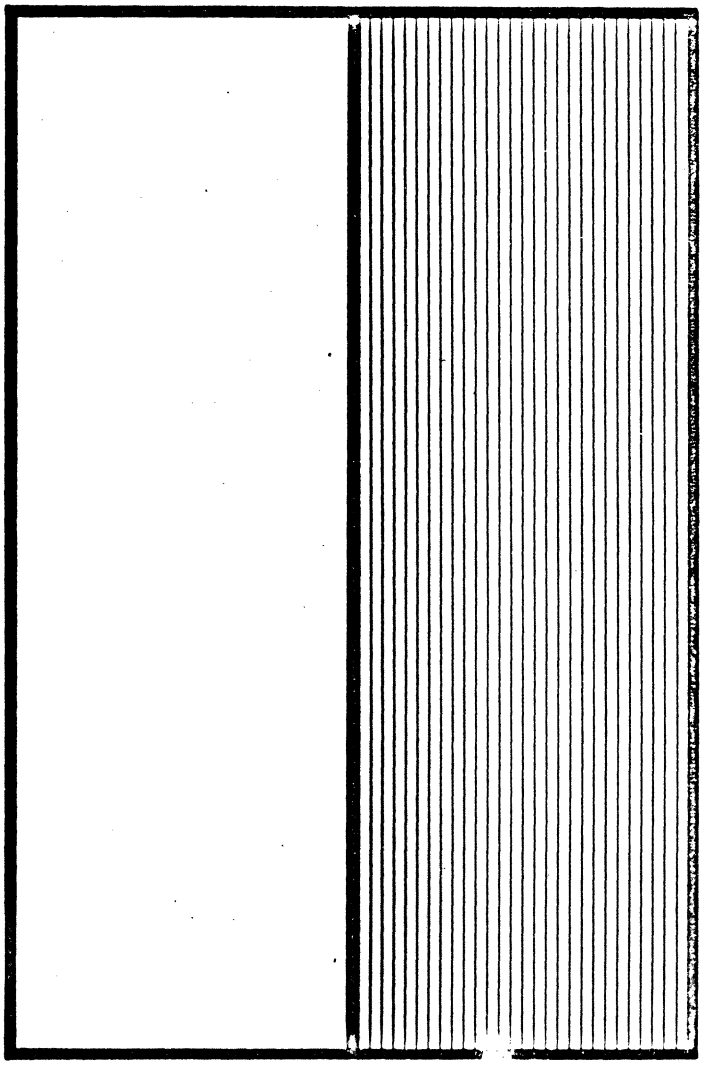
4091705

SPERRY RAND

UNIVAC 9400 SYSTEM

PROGRAM DESCRIPTION DRAWING



CUSTOMER ENGINEERING

SPERRY RAND UNIVAC

DRAWING NO. 4091705

REVISION -

CUSTOMER ENGINEERING
PRODUCT DIAGNOSTIC SOFTWARE

9400 - 5024/8424 or 8425 Disc Read/Write Test #1
D2020

	SIGNATURE	TITLE	DATE
APPROVAL			
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APPROVAL			

REVISION STATISTICS RECORD

4091705

DWG REV	MSTR REV	RELEASE DATE	DESIGNER NAME	EIR NUMBER	FCO NUMBER
-	N		PDS Phila., Pa.	C12607	

REVISION DESCRIPTION RECORD

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REV	DESCRIPTION
-	Release to 9400 Test Library

4091705

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1. INTRODUCTION

1.1 Purpose. This document describes a 9400 Maintenance test program for the 5024/8424 of 25 Subsystem.

1.2 Major Objectives. The objective of this test program is to perform a test of the 5024/8424 or 25 Subsystem. Test organization and operator options are intended to satisfy the needs of Design, Quality Control and Field Engineering personnel in checkout, acceptance and maintenance activities.

1.3 Equipment Configurations. All equipment configurations must be connected to a Selector I-O channel of the 9400 Processor. This test will operate the following equipment configuration:

- Disc File Control - Type 5024
- Disc Drive - Type 8424 or 25
- Disc Pack Assembly - Type F12 14-01

1.4 Associated Software. This program has DSKH included as an integral part of the program. This is the standard disc handler routine used by all Disc Maintenance test programs. It is the interface between the program and MCR, which performs program load, parameterization, execution, deletion, I-O handling, and message handling.

1.5 Reference Documents

DRAWING	DESCRIPTION
S70040	UNIVAC 9400 Processor, Type 3019-00 and -01.
—	UNIVAC 9400 Dual I-O Selector Channel, Type XXXX-00 and -01.
P10076	Disc File Control, Type 5024. 8424 or 25
4091622	Maintenance Control Routine.
4091623	Parameter and Message Routines.
4091670	5024/8414 Disc Program Handler.

2. FUNCTIONAL DESCRIPTION

2.1 General Organization. This program tests all of the read and write count, key and data commands of the 5024/8424 disc sybsystem, with the exception of the Write Special Count, Key and Data command. It starts by executing various Write and Read Count, Key and Data and Read Count commands. Next, Write and Read Key and Data and Write and Read Data commands are tested. The Initial Program Load command is executed. An attempt is made to read a false address mark.

2.2 Program Description

2.2.1 Test 1 (Group Test)

Objective - The objective of test 1 is to enable several tests to be internally selected simply by entering subtest 1. Test 1 selects test 2 thru 10.

Method - The program places bits into the parameter location which tells DSKII which tests to enter.

2.2.2 Test 2 (Write and Read Count, Key and Data Record, and Read Count Placement and Valid Chaining Sequences)

Objective - This test verifies that Count, Key and Data records are written properly on a track. It also tests all of the valid chaining sequences for Read and Write Count, Key and Data, and Read Count commands.

Method - Count, Key and Data records are written, then read back to verify that these records are placed in their correct positions on the track and do not overlay preceding records. All of the valid chaining sequences for writing and reading Count, Key and Data records are issued.

2.2.3 Test 3 (Write and Read Various Size Count, Key and Data Records)

Objective - Normal and truncated Write and Read Count, Key and Data Record commands are issued.

Method - Various sized Count, Key and Data records, including truncated records, are written, then read back to verify that the correct record lengths were written. These records are read using both the Read Count, Key and Data and Read Count commands.

2.2.4 Test 4 (Count, Key and Data Record Track Erasing)

Objective - Track erasing before and after writing a Count, Key and Data record is tested.

Method - A Count, Key and Data record is erased, then a Search is performed for the erased record. A Write Count, Key and Data Record command followed by a Sense I-O command in the same chain is executed. The Sense I-O will be executed after the track is erased.

2.2.5 Test 5 (Write and Read Key and Data Record Placement and Valid Chaining Sequence)

Objective - This test verifies that Key and Data records are written properly on a track. It also tests all of the valid chaining sequences for Read and Write Key and Data Record commands.

Method - Key and Data records are written, then read back to verify that these records are placed in their correct positions on the track and do not overlay succeeding or preceding records. All of the valid chaining sequences for writing and reading Key and Data records are issued.

2.2.6 Test 6 (Write and Read Various Size Key and Data Records)

Objective - Normal and truncated Write and Read Key and Data Record commands are issued.

Method - Various sized Key and Data records, including truncated records, are written, then read back to verify that the correct record lengths were written.

2.2.7 Test 7 (Write and Read Data Record Placement and Valid Chaining Sequence)

Objective - This test verifies that Data records are written properly on a track. It also tests all of the valid chaining sequences for Read and Write Data Record commands.

Method - Data records are written, then read back to verify that these records are placed in their correct positions on the track and do not overlay succeeding or preceding records. All of the valid chaining sequences for writing and reading Data records are issued.

2.2.8 Test 8 (Write and Read Various Size Data Records)

Objective - Normal and truncated Write and Read Data Record commands are issued.

Method - Various sized Data records, including truncated records, are written, then read back to verify that the correct record lengths were written.

2.2.9 Test 9 (Initial Program Load)

Objective - The Initial Program Load command is tested.

Method - A Seek is executed for a cylinder number higher than 0, then the IPL command is issued and the contents of the record that was read is checked. The IPL command is also issued with the Multiple Track bit set. All valid chaining sequences using the IPL command are tested.

2.2.10 Test 10 (False Address Mark)

Objective - This test makes certain that data having the bit configuration of an Address Mark is never mistaken for an actual Address Mark.

Method - A false Address Mark, its preceding beta gap, and succeeding Count Area are written as part of the data in a normal data record. A search is made for the false Address Mark after issuing a No Operation command in the same chain which clears the track orientation.

3. OPERATING PROCEDURES

The Disc Handler Routine is used as a standard interface between the program and MCR. All operating procedures described in the DSKII documentation hold equally well for this program.

3.1 Initialization. See DSKII documentation. The program is called by typing in the name D4020.

3.2 Test Program Parameters. See DSKII documentation.

3.3 Test Program Messages. The DSKII documentation describes all test entry and exit messages and a standard I-O error message. Data errors are detected by the program, and all data error messages are contained in the program. Register 9 is used to jump to the various error routines, so its contents are printed with most error messages.

3.3.1 Test 1 - A simple parameter setting is performed here, so no errors can occur.

3.3.2 Test 2 - Placement of Count, Key and Data Records

```
R9XXXXXX
OVERLAID RECORDS      X----------X
  SHOULD BE           X----------X
```

Three Count, Key and Data records with a total key and data size of 8 bytes each are printed. The first line represents the records as they were read back after being written. The second line represents the records as they should have been written.

3.3.3 Test 3 - Write and Read Various Size Count, Key and Data Records

```
R9XXXXXXXX
INCORRECT RECORD      X----------X
  SHOULD BE           X----------X
```

The format of a Count, Key and Data record is printed as it was read back after being written and as it should have been written.

Write and Read a 255 Byte
Key Record (Count, Key and Data Record Command)

```
R9XXXXXXXX  255 BYTE KEY RECORD
INCORRECT XX SHOULD BE XX - LOC. nnnn
```

Read various size count records

```
R9XXXXXXXX
COUNT RECORD INCORRECT  X----------X
  SHOULD BE             X----------X
```

3.3.4 Test 5 - Placement of Key and Data records

```
R9XXXXXXXX
OVERLAID RECORDS      X----------------------------X
  SHOULD BE           X----------------------------X
```

Three 8 byte Key and Data records, together with their Count areas, are printed. The first line represents the Key and Data records as they were read back after being written. The second line represents the records as they should have been written.

3.3.5 Test 6 - Write and Read Various Size Key and Data Records

```
R9XXXXXXXX
INCORRECT RECORD      X-------------X
  SHOULD BE           X-------------X
```

A Key and Data record and its Count area are printed as it was read back after being written and as it should have been written.

Write and Read a 255 Byte Key Record (Key and Data Record Command)

```
R9XXXXXXXX    255 BYTE KEY RECORD
INCORRECT  XX SHOULD BE XX - LOC. nnnn
```

3.3.6 Test 7 - Placement of Data Records

```
R9XXXXXXXX
OVERLAID RECORDS      X----------------------------X
  SHOULD BE           X----------------------------X
```

Three 8 byte data records, together with their Count areas, are printed. The first line represents the Data records as they were read back after being written. The second line represents the records as they should have been written.

3.3.7 Test 8 - Write and Read Various Size Data Records

```
R9XXXXXXXX
INCORRECT RECORD      X----------------------X
  SHOULD BE           X----------------------X
```

A Data record and its Count area are printed as it was read back after being written and as it should have been written.

3.3.8 Test 9 - Initial Program Load

```
R9XXXXXXXX
IPL RECORD - BYTE IN LOCATION nnnn READ AS XX SHOULD BE XX
```

The first record on Cylinder 0, Track 0 was read incorrectly.

Write False Address Mark

```
FOUND FALSE ADDRESS MARK
```

3.3.9 NOTE: Whenever a record is read incompletely, each missing byte is identifi by printing an FF_{16}.

4. SUPPLEMENTARY DATA

4.1 Supplementary Software Information. Each test of the program is entered separately by DSKII and stands alone. It could be extracted from the rest of the program and either be eliminated or assembled by itself with DSKII.

4.2 Supplementary Hardware Information. See DSKII documentation.